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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/438,037	11/10/1999	DAVID V. CALETKA	EN9-99-080	8809

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EXAMINER

MITCHELL, JAMES M

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 02/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/438,037

Applicant(s)

CALETKA ET AL.

Examiner

James Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 1-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 14-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☒ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the election filed January 23, 2002.

Election

2. Applicant's election with traverse of claims 14-26 in Paper No. 8 is acknowledged. The traversal is on the ground(s) that the search and examination of the application could be made without serious burden. This is not found persuasive since the reasons for insisting upon restrictions as stated in M.P.E.P 808 have been clearly met.

3. The requirement is still deemed proper and is therefore made FINAL.
4. Claims 1-13 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 20-24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.
7. In regards to claim 24, there is no support in the specification that the first dimension of the opening of the mask coincides with the direction of stress within the

integrated circuit, the applicant states that the opening coincides with the stress within the solder joints.

8. Further there is no support, for an opening having a first dimension larger than the "conductive pad".

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 24 ^{Ar 0 25} are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claim 24 recites the limitation "the integrated circuit" in Line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 20 and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Shirai et al. (U.S 5,517,756).

14. Shirai discloses a substrate (11) that has a plurality of conductive pads (20), a non-wettable polymer mask (14) formed thereon with an opening (15) having a first dimension larger than a portion of said pad and greater than a second dimension of said opening (Fig. 2), the second dimension is smaller than a portion of the pad, and the first

dimension coincides with the direction of the highest stress within the interconnection (via an interconnection being formed in the first opening; Lines 26-29, Column 5).

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

15. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

16. Claims 20 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee (U.S 5,872,399).

17. Lee discloses a substrate (Fig. 4E, Item 300) inherently with a plurality of circular conductive pads (140) shown in Fig. 4A, a mask with an opening (210) having a first dimension larger than a portion of said pad (via the portion of pad smaller than mask opening in Fig.4B), and a second dimension smaller than a portion of the pad (via the portion of pad, which protrudes from the mask opening).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20. Claims 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zakel (U.S. 6,277,660).

21. Zakel (Fig. 6) discloses a first substrate (21) and a second substrate (10) wherein the second substrate includes a plurality of partially captured pads (17)

22. In regards to claim 14, the recitation of an integrated chip package has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

23. Claims 14-19 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirai et al. (U.S. 5,517,756).

24. Shirai discloses a first substrate (inherent within a chip; Line 26, Column 5) and a second substrate (Fig.1, Item 11) wherein the second substrate includes a plurality of partially captured pads (Fig. 2, Item 13) with the pads formed by a mask having

elongated non-circular openings (15) of a first and second dimension, wherein the first dimension is greater than the second dimension (Lines 1-2, Column 4) and an interconnection ("solder", Lines 25-29, Column 5) has a combination of mask and pad defined solder joint profile.

25. In regards to claim 14, the recitation of an integrated chip package has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951)

26. In regards to claims 21 and 22, Shirai does not show that the openings and pads of the invention are circular. However, Shirai explicitly discloses that other shapes besides a rectangular shape can be used for the pads and openings (Lines 60-62, Column 6).

27. It would have been obvious to one of ordinary skill in the art to form circular pads, since the use of circular pads were well known at the time the invention was made.

28. In regards to claims 18 and 23 while Shirai does not explicitly disclose that the first dimension of the opening is selectively oriented in the direction of highest stress within an interconnection, absent a teaching of criticality, it would have been obvious to one of ordinary skill in the art to form the first dimension of the opening in the direction of the highest stress within the interconnect, since it has been held that a

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rearrangement of parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70 (CCPA 1950).

Conclusion

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jimarez et al. (U.S 6,194,667).

The prior art discloses in Jimarez the use of elongated openings within a solder mask wherein a portion of the pad is both within a beyond the opening.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Jmm
Jmm

February 21, 2002

David E. Graybill

DAVID E. GRAYBILL
PRIMARY EXAMINER